



User's Manual

3301712

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How to Use This Manual

The manual describes how to configure your 3301712 system to meet various operating requirements. It is divided into five chapters, with each chapter addressing a basic concept and operation of Single Board Computer.

Chapter 1 : Introduction. presents what you have in the inside of box and give you an overview of the product specifications and basic system architecture for this model of single board computer.

Chapter 2 : Hardware Configuration Setting. shows the definitions and locations of Jumpers and Connectors that you can easily configure your system.

Chapter 3 : System Installation. describes how to properly mount the CPU, main memory and M-systems flash disk to get a safe installation and give you a programming guide of Watch Dog Timer function.

Chapter 4 : BIOS Setup Information. specifies the meaning of each setup parameters and how to get advanced BIOS performance and update new BIOS. In addition, POST checkpoint list will give you a guide of trouble-shooting.

Chapter 5 : ATX Power Setting. provides you a few useful tips to quickly get your 3301712 running with different power supply. As jumper configuration has been addressed in the earlier paragraphs, this section will basically focus on the ATX power setting.

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CHAPTER 1

Introduction

The 3301712 all-in-one single board computer is designed to fit a high performance Pentium-III based CPU and compatible for high-end computer system with PCI/ISA Bus architecture. It is made to meet today's demanding pace, and keep complete compatibility with hardware and software designed for the IBM PC/AT. It is beneficial to build up a high performance system for VARs, or system integrators. The on-board 3D Graphics display, and fast Ethernet interface will bring full functionality and high performance to all segments of the industrial PC market.

This single board computer runs with dual Intel Pentium-III (FC-PGA & FC-PGA2) processors, and supports DIMM up to 1.5 GB SDRAM. The enhanced on-board PCI IDE interface can support 4 drives up to PIO mode 4 timing and Ultra DMA/33/66/100 synchronous mode feature. The on-board Super I/O integrates one floppy controller, two serial ports, one keyboard controller, one hardware monitor, one IrDA port and one parallel port. Two high performance 16C550-compatible UARTs provide 16-byte transmit/receive FIFOs, and the multi-mode parallel port supports SPP/EPP/ECP function. Besides, three USB (Universal Serial Bus) ports provide high-speed data communication between peripherals and PC. PCI type daughter board can also be compatible to 3301712.

The PICMG standard makes the 3301712 work with the legacy ISA, ISA/PCI or multi-slots PCI-bus backplane. The on-board 32-pin DIP socket supports M-systems DiskOnChip 2000 product up to 288MB. The Watch-Dog Timer function can be used to monitor your system status. One 6-pin Mini-DIN connector (with Y-Cable) is provided to connect PS/2 Mouse and Keyboard. The on-board Flash ROM is used to make the BIOS update easier. Two standard 5-1/4" drive power connectors are reserved to directly get more power energy for big power applications, and the additional 5-pin shrouded connector is reserved for connecting Keyboard interface on the backplane. One 4-pin header is designed to support ATX power function. All of these features make 3301712 excellent in stand-alone applications.

1-1 Check List

The 3301712 package should cover the following basic items accompany with this manual.

- One 3301712 single board computer
- One Parallel Port cable kit
- One Serial Port cable to support two interfaces
- One FDC cable
- One IDE cable
- One Y-Cable cable for PS/2 Keyboard and Mouse
- One 5-pin to 5-pin keyboard cable for backplane connection
- One 4-pin ATX power control cable for backplane connection
- One CD of 3301712 drivers with electronic version user's manual
- One quick installation guide

If any of these items is damaged or missing, please contact your vendor and keep all packing materials for future replacement and maintenance.

1-2 Product Specifications

- **Main processor**
 - Dual Intel Pentium-III processors
 - CPU bus frequency : 66/100/133 MHz
 - Standard socket 370 for FC-PGA/FC-PGA2 CPU (No support for Celeron)
- **BIOS**
 - Award system BIOS with 4Mb flash ROM to support DMI, PnP, APM, and ACPI
- **Main Memory**
 - Three 168-pin DIMM sockets, supporting PC133/PC100 SDRAM up to 1.5GB (ECC and Registered DIMM Supported)
- **L2 Cache Memory**
 - 256KB/512KB built in Pentium-III/ Pentium-III-S processor
- **Chipset**
 - VIA Apollo Pro133T Chipset
- **Bus Interface**
 - Follow PICMG 1.0 Revision 2.0 standard (32-bit PCI and 16-bit ISA)
 - Fully complies with PCI Local Bus specification V2.1 (support 4 master PCI slots)
- **PCI IDE Interface**
 - Support two enhanced IDE ports up to four HDD devices with PIO mode 4 and Ultra DMA/33/66/100 mode transfer and Bus Master feature
- **Floppy Drive Interface**
 - Support one FDD port up to two floppy drives and 5-1/4"(360K, 1.2MB), 3-1/2" (720K, 1.2MB, 1.44MB, 2.88MB) diskette format and 3-mode FDD
- **Serial Ports**
 - Support two high-speed 16C550 compatible UARTs with 16-byte T/R FIFOs
- **IR Interface**
 - Support one 6-pin header for serial Standard Infrared wireless communication

- **Parallel Port**
Support one parallel port with SPP, EPP and ECP modes
- **USB Interface**
USB 1.1 support three ports for high speed I/O peripheral devices
- **PS/2 Mouse and Keyboard Interface**
Support one 6-pin Mini-DIN connector and one 5-pin shrouded connector for PS/2 mouse/keyboard connection through Y-Cable and backplane connection
- **ATX Power Control Interface**
One 4-pin header to support ATX power control with Modem Ring-On and Wake-On-LAN function
- **Auxiliary I/O Interfaces**
System reset switch, external speaker and HDD active LED
- **Real Time Clock/Calendar (RTC)**
Support Y2K Real Time Clock/calendar with battery backup for 7-year data retention
- **Watchdog Timer**
Support watchdog timer from 0.5 to 64 sec. by hardware count & software trigger
- **Disk-On-Chip (DOC) Feature**
Reserved one 32-pin socket for M-systems Flash Disk up to 288MB
DOS, Windows, Win95, NT (bootable) drivers and Utility supported
- **On-board VGA**
ATI Rage Mobility M/M1 with 4MB/8MB SDRAM
- **On-board Ethernet LAN**
Intel 82559 LAN controller to support RJ-45 interface at 10/100 Base-T speed
- **On-board 68-pin PCI device connector**
Support one additional PCI device daughter board
- **High Driving Capability**
Support 64mA high driving capability for multi-slots ISA-bus

- **External Power Connector**
Support two standard 5-1/4" disk drive power connectors to enhance power driving
- **CPU Cooling Fan**
Support two 3-pin headers with wafer
- **System Monitoring Feature**
Monitor CPU and system temperature, operating voltage, and fan status
- **Bracket**
Support one Mini-DIN, one-port USB, one Ethernet port and one VGA port
- **Physical and Environmental Requirements**
 - Outline Dimension (L X W) : 338.5mm (13.33") X 122mm (4.8")
 - PCB layout : 8 layer
 - Power Requirements : +5V @15A , +12V @200mA
 - Operating Temperature : 0°C ~ 55°C (32°F ~ 131°F)
 - Storage Temperature : -20°C ~ 75°C
 - Relative Humidity : 5% ~ 95%, non-condensing

1-3 System Architecture

The following illustration will show you how 3301712 gives you a highly integrated system solution. The most up-to-date system architecture of 3301712 includes three main VLSI chips, VIA VT82C694T, VT82C686B and ATI Rage-Mobility M/M1, to support Pentium-III (FC-PGA/FC-PGA2) processor, SDRAM, 3D graphic display, PCI bus interface, APM, ACPI compliant power management, USB port, SMBus communication, Ultra DMA/33/66/100 IDE Master, PS/2 Keyboard/Mouse, two UARTs, FDC, Hardware Monitor, Parallel, Watch Dog Timer and Infrared interface. Besides, Intel 82559 LAN controller provides a competitive fast Ethernet function.

The CPU socket adopts the Socket-370 type to support high availability, reliability, and easy operation in general industry application.

The VT82C694T provides an integration of memory controller and graphics capability (AGP). It combined with AGP 2X ATI VGA chip provides highest effect/cost ratio for 3D textures and MPEG-2 hardware decoding solutions. Its 64-bit AGTL+ based host bus interface, optimized 64-bit DRAM interface supports three 3.3V DIMMs at the maximum bus frequency of 100/133 MHz. The 32-bit PCI bus interface supports 4 PCI masters for external backplane support.

The VT82C686B supports 2-channel dedicated Ultra DMA-33/66/100 IDE master interfaces, full Plug-and-Play compatibility, APIC (Advanced Programmable Interrupt Controller) interface, and internal real-time clock (RTC) to maintain time and date of a system. It also supports 3-port USB (Universal Serial Bus feature) and PCI 2.1 Compliance operation. It fully supports Operating System Directed Power Management via the Advanced Configuration and Power Interface (ACPI) specification. In addition, it also integrates two high-speed serial ports, one parallel port, SIR interface, H/W monitoring, FDD interface and 8042 keyboard controller with PS/2 mouse ports. This parallel port supports one PC-compatible printer port (SPP, bi-direction), Enhanced Parallel Port (EPP) and Extended Capabilities Port (ECP). Watch Dog Timer can be enabled by jumper settings. 3301712 supports DiskOnChip (DOC) for M-system flash disk.

There is one on-board Intel 82559 PCI Fast Ethernet via RJ-45 Ports to support full functionality of 3301712 AIO SBC (All-In-One Single Board Computer). The on-board 68-pin PCI connector supports additional daughter board for further support.

All of details of operating relations are shown in Figure 1-1 3301712 System Block Diagram.

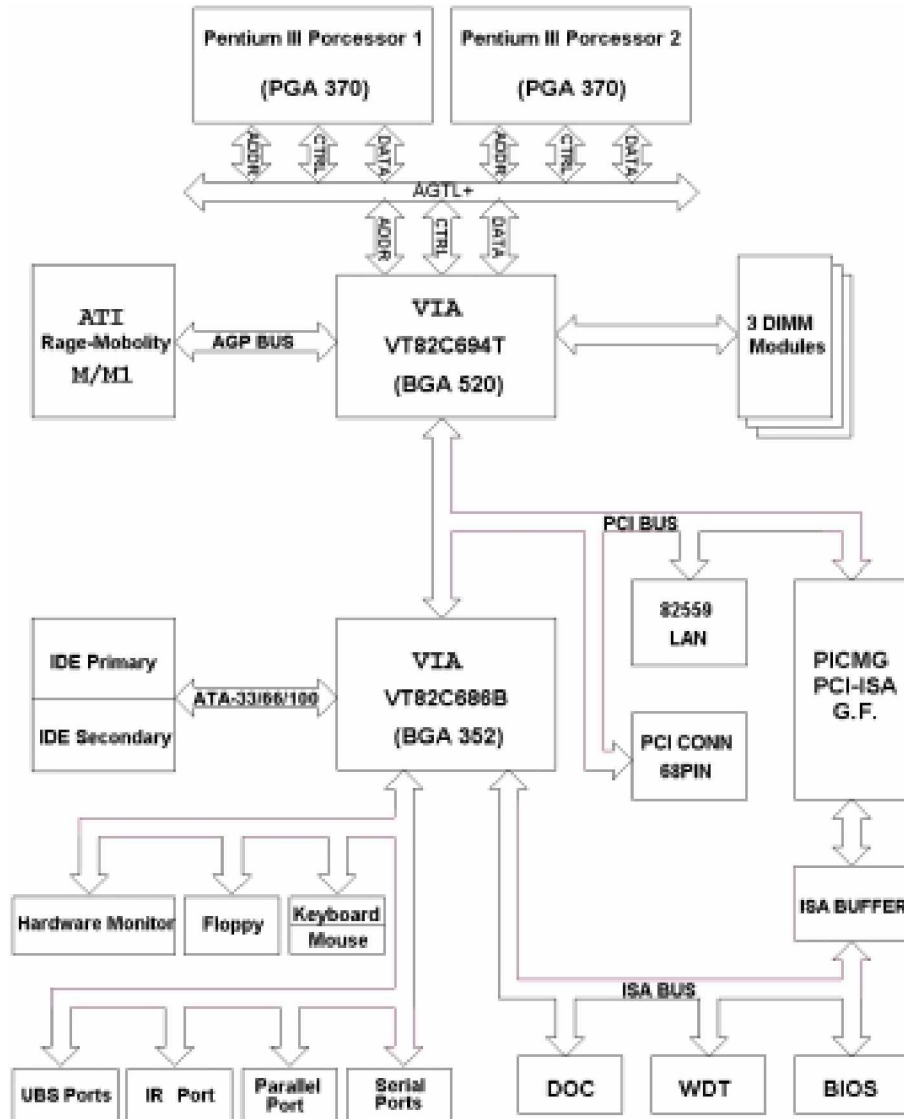


Figure 1-1 3301712 System Block Diagram

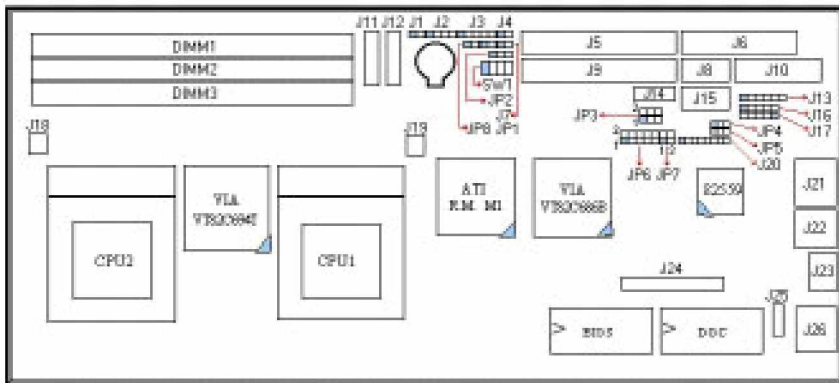
CHAPTER 2

Hardware Configuration Setting

This chapter gives the definitions and shows the positions of jumpers, headers and connectors. All of the configuration jumpers on 3301712 should be in the proper position. The default settings shipped from factory are marked with a star (*).

Jumpers & Connectors

In general, jumpers on the single board computer are used to select options for certain features. Some of the jumpers are designed to be user-configurable, allowing for system enhancement. The others are for testing purpose only and should not be altered. To select any option, cover the jumper cap over (Short) or remove (NC) it from the jumper pins according to the following instructions. Here NC stands for "Not Connected".



3301712 Jumper & Connector Locations

CPU Jumper Setting Table (SW1)

DIP switch settings for Coppermine CPU core/bus ratio

ON	ON	ON	ON	2.0x
ON	ON	ON	OFF	2.5x
ON	ON	OFF	ON	3.0x
ON	ON	OFF	OFF	3.5x
ON	OFF	ON	ON	4.0x
ON	OFF	ON	OFF	4.5x
ON	OFF	OFF	ON	5.0x
ON	OFF	OFF	OFF	5.5x
OFF	ON	ON	ON	6.0x
OFF	ON	ON	OFF	6.5x
OFF	ON	OFF	ON	7.0x
OFF	ON	OFF	OFF	7.5x
OFF	OFF	ON	ON	8.0x

DIP switch settings for Tualatin CPU core/bus ratio

ON	ON	ON	ON	4.0x
OFF	ON	OFF	OFF	7.5x
OFF	OFF	ON	ON	8.0x
ON	ON	OFF	ON	8.5x
ON	ON	OFF	OFF	9.0x
ON	ON	ON	OFF	9.5x
OFF	OFF	ON	OFF	10 x
ON	OFF	ON	ON	10.5x
OFF	OFF	OFF	ON	11 x
ON	OFF	ON	OFF	11.5x
ON	OFF	OFF	ON	12 x
OFF	OFF	OFF	OFF	4.0x (safe mode)

On-board VGA enable/disable (JP1 & JP8)

NC	NC	On-board VGA Enabled
Short	Short	On-board VGA Disabled

CLEAR CMOS RAM (JP2)

1-2	Clear CMOS RAM Disabled
2-3	Clear CMOS RAM Enabled

AT/ATX Power Selection (JP3)

1-3,2-4	Select AT Power Supply
3-5,4-6	Select ATX Power Supply

PS2 Mouse enable/disable (JP4)

1-2	PS2 Mouse Enabled
2-3	PS2 Mouse Disabled

On-board Ethernet enable/disable (JP5)

1-2	On-board Ethernet Enabled
2-3	On-board Ethernet Disabled

WATCH DOG TIMER Jumper Setting (JP6)

NC	Watch DOG Timer Enabled
Short	Watch DOG Timer Disabled

NC	533/033
Short	543/343

Short	Short	Short	0.5 sec
Short	Short	NC	1 sec
Short	NC	Short	2 sec
Short	NC	NC	4 sec
NC	Short	Short	8 sec
NC	Short	NC	16 sec
NC	NC	Short	32 sec
NC	NC	NC	64 sec

Disk-On-Chip Jumper Setting (JP7)

D8000 - D9FFF	1-2:NC	3-4:NC
DA000 - DBFFF	1-2:NC	3-4:SHORT
DC000 - DDFFF	1-2:SHORT	3-4:NC
DE000 - DFFFF	1-2:SHORT	3-4:SHORT

Function Descriptions of Connectors

J1	System reset	
J2	External speaker interface	
J3	Reversed	
J4	IDE1/IDE2 active status report interface	
J5	IDE1 (Primary) interface	
J6	Floppy connector	
J7	ATX power button interface	Connect to chassis
J8	COM1 serial port	2 x 5 Shrouded Header
J9	IDE2 (Secondary) interface	
J10	Parallel port connector	
J11	Standard 5-1/4" disk power connector	4-pin connector (pitch : 0.2 inch)
J12	Standard 5-1/4" disk power connector	4-pin connector (pitch : 0.2 inch)
J13	IrDA (infrared) port ATX power control interface	Support FIR/SIR
J14	ATX power control interface	Connect to Backplane
J15	COM2 serial port	2 x 5 Shrouded Header
J16	USB Interface Connector	5-pin connector (pitch : 0.1 inch)
J17	USB Interface Connector	5-pin connector (pitch : 0.1 inch)
J18	CPU2 fan power connector	
J19	CPU1 fan power connector	
J21	On-board Ethernet Interface Connector	
J22	One-port USB Interface Connector	
J23	PS/2 Keyboard/Mouse Connector	6-pin Mini-Din
J24	68 pin PCI Connector	
J25	External Keyboard Connector	Connect to Backplane
J26	On-board VGA Connector	DSUB-15

Pin Assignments of Connectors

J1: Reset Header

1	Reset
2	Ground

J2 : External Speaker Header

1	Speaker signal
2	N/C
3	Ground
4	+5V

J4: IDE1/IDE2 Active LED Header

1	+5V (470 ohm pull-up for HDD LED)
2	HDD Active # (LED cathode terminal)

J5 /J9: IDE1/IDE2 Interface Connector

1	RESET#	2	Ground
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	Ground	20	N/C
21	DMA REQ	22	Ground
23	IOW#	24	Ground
25	IOR#	26	Ground
27	IOCHRDY	28	Pull-down
29	DMA ACK#	30	Ground
31	INT REQ	32	N/C
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD Active#	40	Ground

J6 : FDC Interface Connector

1	Ground	2	Density Select
3	Ground	4	N/C
5	Ground	6	N/C
7	Ground	8	Index#
9	Ground	10	Motor ENA#
11	Ground	12	Drive Select B#
13	Ground	14	Drive Select A#
15	Ground	16	Motor ENB#
17	Ground	18	Direction#
19	Ground	20	Step#
21	Ground	22	Write Data#
23	Ground	24	Write Gate#
25	Ground	26	Track 0#
27	Ground	28	Write Protect#
29	Ground	30	Read Data#
31	Ground	32	Head Select#
33	Ground	34	Disk Change#

J7 : ATX Power Button Interface

1	Power Button Control Signal
2	Ground

J8/J15 : Serial Port-1/Port-2 Connector (2 x 5 shrouded header)

1	Data Carrier Detect (DCD)
2	Receive Data (RXD)
3	Transmit Data (TXD)
4	Data Terminal Ready (DTR)
5	Ground (GND)
6	Data Set Ready (DSR)
7	Request to Send (RTS)
8	Clear to Send (CTS)
9	Ring Indicator (RI)
10	N/C

J10: Parallel Port Connector

1	Strobe#	14	Auto Form Feed#
2	Data 0	15	Error#
3	Data 1	16	Initialization#
4	Data 2	17	Printer Select IN#
5	Data 3	18	Ground
6	Data 4	19	Ground
7	Data 5	20	Ground
8	Data 6	21	Ground
9	Data 7	22	Ground
10	Acknowledge#	23	Ground
11	Busy	24	Ground
12	Paper Empty	25	Ground
13	Printer Select	26	N/C

J11/J12 : Standard 5-1/4" disk power connector

1	+12V
2	GND
3	GND
4	+5V

J13 : Fast & Standard IrDA Header

1	VCC (+5V)
2	FIR
3	IRRX
4	Ground
5	IRTX
6	OVCROFF (Over Current Off)

J14 : ATX Power Control Connector

1	ATX Power Good Signal
2	ATX 5V Stand-by
3	ATX Power On Control
4	Ground

J16/J17 : USB Interface Connector

1	+5V	2	USBD1/D2-
3	USBD1/D2+	4	USBGND1
5	GND		

4

J18/19: CPU2CPU1Fan Power Connector

1	Ground
2	+12V
3	Pull-up 5V (Reserved for sense signal)

J21 : Ethernet RJ-45 Interface Connector

1	TX+
2	TX-
3	RX+
4	Termination to Ground
5	Termination to Ground
6	RX-
7	Termination to Ground
8	Termination to Ground

J22 : One-port USB Interface Connector

5	+5V	6	USBD0-
7	USBD0+	8	USBGND0

J23 : PS/2 Keyboard/Mouse Connector (6-pin Mini-DIN)

1	Mouse Data
2	Keyboard Data
3	GND
4	+5V
5	Mouse Clock
6	Keyboard Clock

J24 : 68 pin PCI Connector

1	VCC	2	AD0
3	AD1	4	AD2
5	AD3	6	AD4
7	AD5	8	AD6
9	AD7	10	GND
11	VCC	12	AD8
13	AD9	14	AD10
15	AD11	16	AD12
17	AD13	18	AD14
19	AD15	20	GND
21	VCC	22	AD16
23	AD17	24	AD18
25	AD19	26	AD20
27	AD21	28	AD22
29	AD23	30	GND
31	VCC	32	AD24
33	AD25	34	AD26
35	AD27	36	AD28
37	AD29	38	AD30
39	AD31	40	GND
41	VCC	42	BE#0
43	BE#1	44	BE#2
45	BE#3	46	PAR
47	Frame#	48	TRDY#
49	IRDY#	50	GND
51	VCC	52	STOP#
53	Devsel#	54	Reserved for PERR#
55	SERR#	56	REQ#4
57	GNT#4	58	Reserved for REQ#3
59	Reserved for GNT#3	60	GND
61	PCI Clock1	62	PCI Clock2
63	PCIRST#	64	LOCK#
65	IRQ#A	66	IRQ#B
67	IRQ#C	68	IRQ#D

J25 : External Keyboard Connector

1	Keyboard Clock
2	Keyboard Data
3	N/C
4	Ground
5	+5V

J26 : On-board VGA DSUB-15 Connector

1	R
2	G
3	B
4	Reserved
5	Ground
6	Ground
7	Ground
8	Ground
9	+5V
10	Ground
11	Reserved
12	Reserved
13	HSYNC
14	VSYNC
15	Reserved

CHAPTER 3

System Installation

This chapter provides you with instructions to set up your system. The additional information is enclosed to help you install M-systems Flash disk and set up onboard PCI device.

3-1 Socket 370 Pentium-III Processor

Installing S370 CPU

- 1) Lift the handling lever of CPU socket outwards and upwards to the other end.
- 2) Align the processor pins with pin holes on the socket. Make sure that the notched corner or dot mark (pin 1) of the CPU corresponds to the socket's bevel end. Then press the CPU gently until it fits into place. If this operation is not easy or smooth, don't do it forcibly.
- 3) Push down the lever to lock processor chip into the socket.
- 4) Follow the installation guide of cooling fan or heat sink to mount it on CPU surface and lock it on the socket 370 with a good contact.
- 5) Do the same for the other CPU if this is required.

Removing CPU

- 1) Unlock the cooling fan first.
- 2) Lift the lever of CPU socket outwards and upwards to the other end.
- 3) Carefully lift up the existing CPU to remove it from the socket.
- 4) Follow the steps of installing a CPU to change to another one or place handling bar to re-lock CPU.
- 5) Do the same for the other CPU if this is required.

Configuring System Bus

3301712 will automatically detect system bus based on the type of CPU used. CPU speed of Intel PIII can be detected automatically.

WARNING

3301712 is designed for high performance applications by dual processors architecture. Using only single processor may cause unpredictable errors. Basing on the same reason, Celeron processor is not suitable for 3301712 because it does not support dual processors architecture.

3-2 Main Memory

3301712 provides three DIMMs (168-pin Dual In-line Memory Module) to support 3.3V SDRAM (Synchronized DRAM) as on-board main memory. The maximum total memory size can be up to 1.5 GB. It also supports ECC & registered DIMMs.

For system compatibility and stability, memory module without a brand is not suggested. You can also use the single or double-sided DIMM. Randomly installing DIMM in any one of the DIMM sockets is allowed. You can install different size of DRAM module onto DIMM1, DIMM2, DIMM3 or all DIMM positions to make the system boot.

Watch out the contact and lock integrity of memory module with socket, it will impact on the system reliability. Follow normal procedures to install your DRAM module into memory socket. Before locking, make sure that all modules have been fully inserted into the card slots.

NOTE :

- (1) To maintain system stability, don't change any of DRAM parameters in BIOS setup to upgrade your system performance without acquiring technical information.

3-3 M-systems Flash Disk

3301712 reserves one 32-pin DIP sockets for installing M-systems Flash disk from 2MB to 288MB. This operation structure is running with pure ISA-bus without PnP (Plug and Play) function. Before installing, make sure that I/O address jumper setting is set on right position to prevent unworkable system due to I/O resource conflict. Do remember to follow DOC (DiskOnChip) installation procedure. Otherwise, it is possible to burn out the Flash chip due to incorrect installation.

Installing DOC

Align the DOC with pin holes on the socket. Make sure that the notched corner or dot mark (pin 1) of DOC corresponds to notched corner of the socket. Then press the DOC gently until it fits into place. If installation procedure is correct, the Flash disk can be viewed as a normal hard disk to access read/write data.

WARNING

Please ensure that your DOC is properly inserted. Placing the DOC in reverse will cause severe damage. Remember, a new DOC chip is always a formatted disk. You may simply plug the chip on the DOC socket and read/write through it. If you would like to boot from this Flash disk, it is necessary to refer to the application note from M-systems. You can easily get relative information from M-systems shipping package (such as product manual) or Web-site

<http://www.m-sys.com>.

3-4 Installing the Single Board Computer

To install your 3301712 into standard chassis or proprietary environment, you need to perform the following:

- Step 1 : Check all jumpers setting on proper position
- Step 2 : Install and configure CPU and memory module on right position
- Step 3 : Place 3301712 into the dedicated position in your system
- Step 4 : Attach cables to existing peripheral devices and secure it

WARNING

Please ensure that your SBC is properly inserted and fixed by mechanism. Otherwise, the system might be unstable or do not work due to bad contact of golden finger and ISA-bus slot. It is recommended to apply 4-pin 5-1/4" IDE device power connectors from your power supply onto J11 & J12 to ensure a sufficient current supply.

NOTE : Please refer to section 3-4-1 to 3-4-3 to install 4 IN 1/VGA/LAN drivers.

3-4-1 Chipset Component Driver

The chipset on 3301712 is a new chipset that a few old operating systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows-95/98/98SE/2000, please install VIA 4-in-1 driver before any of other Drivers are installed. You can find very easily this chipset component driver in 3301712 CD-title.

3-4-2 ATI Rage-Mobility M/M1 VGA Chip

3301712 CD-title also include ATI VGA drivers of Microsoft windows series. Since M/M1 needs DirectX (version 7 at least) to enable 3D function, please install Direct X contained in CD when installing WIN95/98/98SE. Windows 2000 has contained DirectX 7 and Windows XP has contained DirectX 8.1, so they don't need to install DirectX.

3-4-3 Intel 82559 Fast Ethernet Controller

Please find 82559 LAN driver in /Ethernet directory of 3301712 CD-title. The drivers support Windows-NT 3.51/4.0, Windows-95/98/98SE, Windows-2000, SCO OpenServer 5.0.2, SCO Unixware 7.0, OS2 and Linux.

In Windows environment, Intel 82559 Fast Ethernet should appear as Intel (R) PRO/100 VE Network Connection.

On-board LED Indicator (for LAN status)

3301712 provides three LED indicators to report 82559 Fast Ethernet interfaces status. Please refer to the table below as a quick reference guide.

Intel			
LED1	LAN Link Integrity LED	Good link in 10 or 100 Mbps	Bad link
LED2	LAN speed LED	100 Mbps	10 Mbps
LED3	LAN active LED	Active	No active

3-4-4 On-board 68-pin PCI connector

3301712 provides one on-board 68-pin PCI connector that allows you to apply additional PCI devices, such as SCSI or Ethernet. If you have a compatible PCI device, simply plug it onto the connector and secure it with two retention bars.

3-5 Clear CMOS Operation

The following table indicates how to enable/disable CMOS Clear Function hardware circuit by putting jumpers at proper position.

1-2 Short	Normal Operation
2-3 Short	Clear CMOS Contents

To correctly operate CMOS Clear function, users must turn off the system, move JP2 jumper to 2-3 position. To clear CMOS, please turn the power back on and turn it off again for AT system, or press the toggle switch a few times for ATX system. Move the JP2 back to 1-2 position (Normal Operation) and start the system. System will then produce a "CMOS Check Sum Error" message and hold up. Users may then follow the displayed message to load in BIOS default setting.

3-6 Watch Dog Timer Programming

It's easy to program Watch Dog Timer by software language(ex. Assembly). After enable Watch Dog Timer hardware jumper (JP6 1-2) and set proper enabled ISA location (ISA address 533h or 543h ,by JP6 3-4), Just read "ISA address 533h/543h" by software language, then watch dog timer will start counting. It can be disable by reading "ISA address 033h/343h" at any time, though Watch Dog Timer is counting!

CHAPTER 4

BIOS Setup Information

3301712 is equipped with the AWARD BIOS stored in Flash ROM. This BIOS has a built-in Setup program that allows users to modify the basic system configuration easily. This type of information is stored in CMOS RAM so that it can be retained during power-off periods. When system is turned on, 3301712 communicates with peripheral devices and check its hardware resources against the configuration information stored in the CMOS memory. If any error is detected, or the CMOS parameters need to be initially defined, the diagnostic program will prompt the user to enter the SETUP program. Some errors are significant enough to abort the start-up.

4.1 Entering Setup

Turn on or reboot the computer. When the message “Hit if you want to run SETUP” appears, press key immediately to enter BIOS setup program.

If the message disappears before you respond, but you still wish to enter Setup, please restart the system to try “COLD START” again by turning it OFF and then ON, or touch the "RESET" button. You may also restart from “WARM START” by pressing <Ctrl>, <Alt>, and <Delete> keys simultaneously. If you do not press the keys at the right time and the system will not boot up, an error message will be displayed and you will again be asked to,

Press <F1> to Run SETUP or Resume

In HIFLEX BIOS setup, you can use the keyboard to choose among options or modify the system parameters to match the options with your system. The table below will show you all of keystroke functions in BIOS setup.

Keys to navigate within setup menu

Key	Functions
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Left Arrow	Move to the item on the left (menu bar)
Right Arrow	Move to the item on the right (menu bar)
Move Enter	Move to the item you desired
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 key	General help on Setup navigation keys
F5 key	Load previous values from CMOS
F6 key	Load the fail-safe defaults from BIOS default table
F7 key	Load the optimized defaults
F10 key	Save all the CMOS changes and exit

4.2 Main Menu

Once you enter 3301712 AWARD BIOS CMOS Setup Utility, you should start with the Main Menu. The Main Menu allows you to select from eleven setup functions and two exit choices. Use arrow keys to switch among items and press <Enter> key to accept or bring up the sub-menu.



NOTE : It is strongly recommended to reload Optimal Setting if CMOS is lost or BIOS is updated.

4.3 Standard CMOS Setup Menu

This setup page includes all the items in a standard compatible BIOS. Use the arrow keys to highlight the item and then use the <PgUp>/<PgDn> or <+>/<-> keys to select the value or number you want in each item and press <Enter> key to certify it.

Follow command keys in CMOS Setup table to change **Date**, **Time**, **Drive type**, and **Boot Sector Virus Protection Status**.



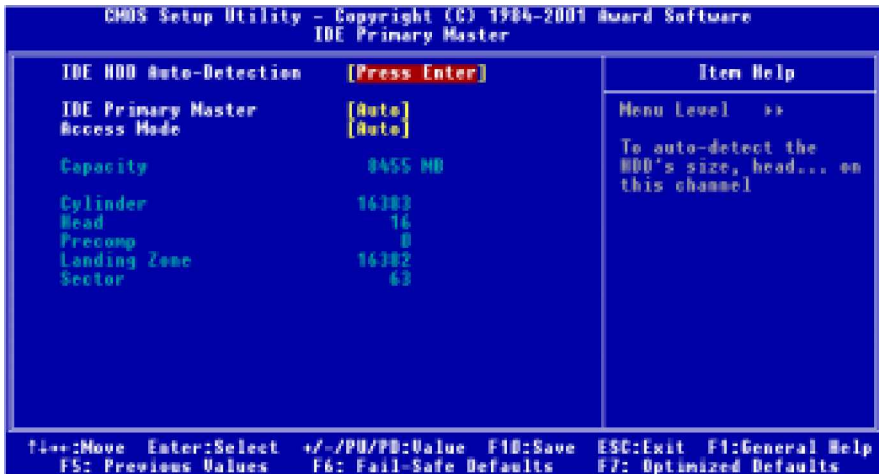
Menu selections

Item	Options	Description
Date	Mm:dd:yy	Set the system date. Note that the 'Day' automatically changes when you set the date
Time	Hh:mm:ss	Set the system time
IDE Primary Master	Options are in its sub menu (described in 4.4 Table)	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (described in 4.4 Table)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in 4.4 Table)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Slave	Options are in its sub menu (described in 4.4 Table)	Press <Enter> to enter the sub menu of detailed options

Item	Options	Description
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in your system
Floppy 3 Mode Support	Disabled Drive A Drive B Both	Select which drive you would like to set to floppy 3 mode.
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

4.4 IDE Adaptors Setup Menu

The IDE adaptors control the IDE devices, such as hard disk drive or cdrom drive. It uses a separate sub menu to configure each hard disk drive.



Menu selections

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
The following options are selectable only if the 'IDE Primary/Secondary Master/Slave' item is set to 'Manual'		
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this hard disk.
Head	Min = 0 Max = 255	Set the number of read/write heads
Precomp	Min = 0 Max = 65535	**** Warning: Setting a value of 65535 means no hard disk
Landing zone	Min = 0 Max = 65535	****
Sector	Min = 0 Max = 255	Number of sectors per track

4.5 Advanced BIOS Features

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.



Virus Warning

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

L1 Cache/L2 Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled	Enable cache
Disabled	Disable cache

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

Enabled	Enable quick POST
Disabled	Normal POST

First/Second/Third Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

Boot Other Device

Select whether the system searches for other bootable device or not when First/Second/Third Boot Device can't boot.

Swap Floppy Drive

This choice can swap drive A and B needless to open a chassis and exchange cable connectors.

Boot Up NumLock Status

Select power on state for NumLock.

The choice: Off/On.

Security Option

Select whether the password is required every time the system boots or only when you enter setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

Note : To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

OS Select For DRAM > 64MB

Select the operating system that is running with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

4.6 Advanced Chipset Features

This section allows you to configure the system based on the specific features of the VIA Apollo Pro133T. This chipset manages bus speeds and access to system memory resources such as DRAM (SDRAM). It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any change would be if you discovered that data was being lost while using your system.



This chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timing has been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

DRAM Timing By SPD

If DIMMs have On-Board Serial Presence Detect (SPD) function, please set it enabled for autodetecting optimize DRAM timing.

DRAM Clock

VIA Apollo Pro133T allows users to adjust DRAM clock by referencing CPU clock (HCLK). There are three modes: HCLK-33MHz, HCLK and HCLK+33MHz.

SDRAM Cycle Latency

This option selects in units of local memory clock periods.

The Choice: 2, 3 SCLKs.

Bank Interleave

There are three modes: disable, 2-way and 4-way. "4-way" has best performance but needs DIMMs hardware specification support. If not sure if DIMMs can support SPD or not, please set this choice at "disable" for maximum stability.

Memory Hole

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory space below 16MB.

P2C/C2P Concurrency

Select the P2C (PCI to CPU) and C2P (CPU to PCI) are synchronized or not.

OnChip USB

Select for enable/disable on board USB (VT82C686B included).

USB Keyboard Support

Select for enable/disable USB Keyboard support. Don't enable this choice when using Microsoft Windows NT 4.0. That will cause system halt because NT does not support USB keyboard function.

USB Mouse Support

Select for enable/disable USB Mouse support. Don't enable this choice when using Microsoft Windows NT 4.0. That will cause system halt because NT not support USB.

CPU to PCI Write Buffer

Enable the choice to open buffer for solving the low performance of data written form CPU to PCI device.Please enable it if there is not any error occurred

PCI Dynamic Bursting

When enabling, any data transfer on PCI-BUS will directly transmit without Buffer on VT82C694T.

PCI Master 0 WS Write

After PCI-Receiver is ready to receive data, PCI-master will immediately send data (select Enable) or delay a PCI condition cycle (select Disable).

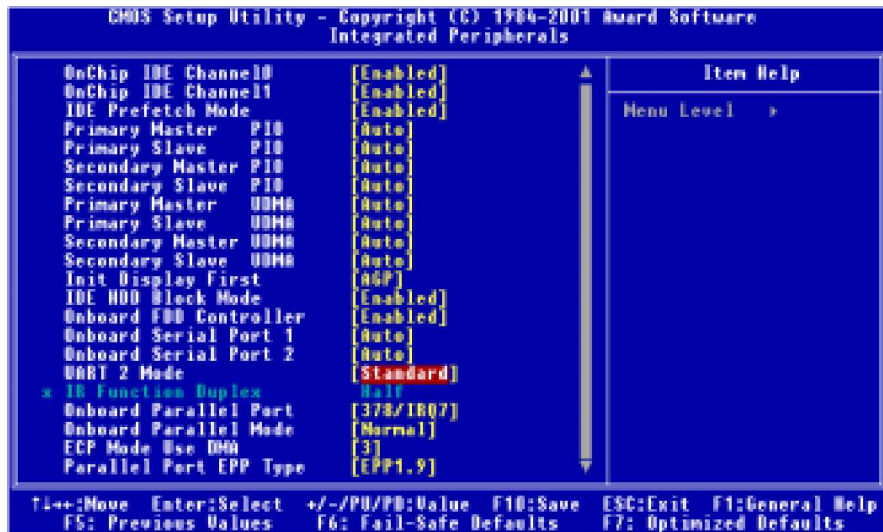
PCI Delayed Transaction

Select "Enabled" to enable delay transaction.This will enhance performance for data transmission between different PCI bus.

Memory Parity/ECC Check

System will check DIMMs are 72-bits (support ECC) or 64-bits (not support ECC).

4.7 Integrated Peripherals



OnChip IDE Channel 0/1

Enable or disable on board IDE controller.

IDE Prefetch Mode

Set enable for the most of cases. If a HDD is too old to support Prefetch Mode, please disable this function.

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33/66/100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver. If your hard drive and your system software both support Ultra DMA/33/66/100, select Auto to enable BIOS support.

Init Display First

This item allows you to select the first display port at AGP or PCI to be initialized. ATI M/M1 VGA Chip supports AGP 2X, so please set "AGP" if onboard VGA is needed to be used.

IDE HDD Block Mode

This item allows you to enable/disable IDE HDD Block Mode. The function is to collect the data that is nearby the one being read and leave them in the system buffer. Buffered data can be used with faster transmission rate so as to enhance system performance.

Onboard FDC Controller

This item allows you to enable/disable onboard Floppy disk controller.

The choice: Enabled/Disabled

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports. The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

UART 2 Mode

This item allows users to select Infrared transmission mode.

Standard	Disable Infrared function
HPSIR	Select IrDA mode transmission
ASKIR	Select ASKIR mode transmission

As Infrared transmission function shares onboard serial port 2, COM2 needs to be enabled.

IR Function Duplex

Select Full-Duplex(enable bidirectional data transmission at the same time) or Half-Duplex(only allow single directional data transmission at the same time)

Onboard Parallel Port

This item allows you to configure I/O address of the onboard parallel port.

The Choices : Disabled, 378/IRQ7, 278/IRQ5, 3BC/IRQ7

Parallel Port Mode

There are four different modes for the onboard parallel port :

SPP	Switch to SPP mode
EPP	Switch to EPP mode
ECP	Switch to ECP mode
ECP / EPP	Switch to ECP or EPP mode
Normal	Switch to Normal mode

ECP Mode Use DMA

Select a proper DMA channel for ECP mode.

The choices : 3/1

EPP Mode Select

Select different version of EPP mode.

The choices : EPP1.7/EPP1.9

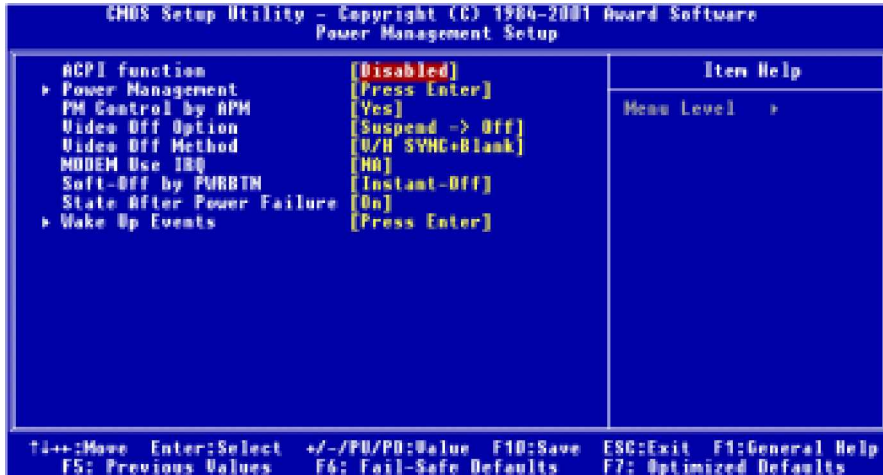
PWRON After PWR-Fail

This item allows user to configure the power status of using ATX power supply after a serious power loss occurs.

On	System automatically restores power back
Off	System stays at power –off
Former- Sts	System restores back to previous status (On or Off)

4.8 Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy while operating in a manner consistent with your own style of computer use.

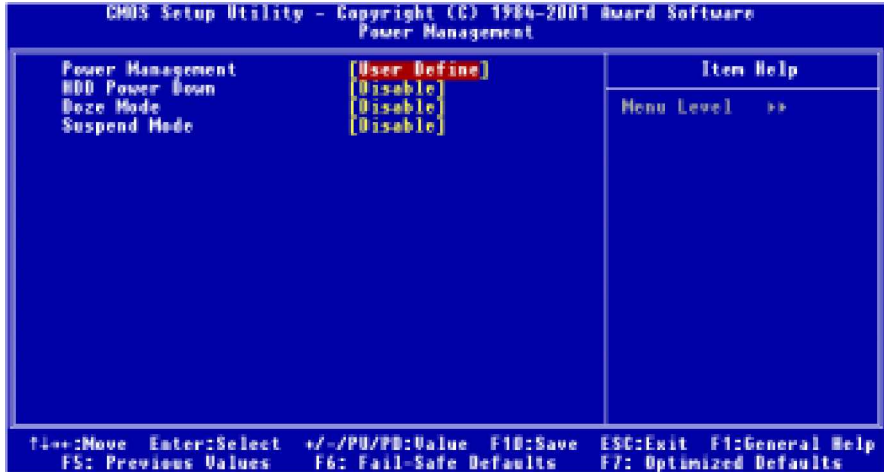


ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). When AT power supply is the system power source, keeping “ACPI function” at “NO” and “State After Power Failure” at “ON” in the Power Management Setup of the BIOS is recommended. If using ATX power supply, remember to adjust the “State After Power Failure” to proper condition.

The choices : Enabled/Disabled.

Power Management



This category allows you to select the type (or degree) of power saving and is directly related to “HDD Power Down”, “Doze Mode” and “Suspend Mode”.

There are three selections for Power Management, three of which have fixed mode settings.

Min. Power Saving	Minimum power management. Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management. Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, Suspend Mode ranges from 1 min. to 1 hr. and HDD Power Down ranges from 1 min. to 15 min.

PM Control by APM

This item allow APM(Advantanced Power Management) to control Power Management.

The choices : Enabled/Disabled.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

MODEM Use IRQ

Assign a IRQ for modem after installed a modem device

The choices : NA,3,4,5,7,9,10,11

Soft-Off by PWRBTN

This item allows users to set the time to remove the power after the power button is pressed.

The choices : Instant-Off/Delay 4 Sec

State After Power Failure

An ATX power supply software control method has 3 modes : On, Off and Auto.

“On” means that power generation always restart after incorrect AC power loss and AC power recovered. “Off” means that power generation never restart after incorrect AC power loss unless pressing Power-Button again. “Auto” means that system will control power on or off after incorrect AC power loss and recovery. If last system state is power off, the power supply always be shut-down unless pressing Power-Button. On the contrary, if last system state is power-on while

AC power incorrect loss, power supply will be restart automatically after AC power recovered.

Note: Basing on the chipset architecture, this item must be set as “ON” when using “AT Power Supply”, or else may results into a unboot condition.

Wake Up Events

This item allows users to set events which can wake up asleep system.



VGA, LPT & COM, HDD & FDD, PCI Master

Those items can be set enable/disable to wake up system. Once they have any status occurred, system at suspend mode will wake up.

Wake Up On LAN

The options available are enabled/disabled. When selecting “Enabled” a system that is at soft-off mode will be alert to Wake-On-LAN signal.

Wake Up On Ring

When “Enabled” is selected, a system that is at soft-off mode will be alert to Wake-On-Modem signal. The choices : Enabled/Disabled.

RTC Alarm Resume

This item allows users to enable/disable the resume by alarm function. When “Enabled” is selected, system using ATX power supply could be powered on if a customized time and day is approached.

Date(of Month)

When “Resume by Alarm” is enabled, this item could allow users to configure the date parameter of the timing dateline on which to power on the system.

The choices : 0 ~ 31

Resume Time(hh:mm:ss)

When “Resume by Alarm” is enabled, this item could allow users to configure the time parameter of the timing dateline on which to power on the system.

The choices : hh (0~23), mm (0~59), ss (0 ~59)

Primary INTR

When setting this item “on”, any enabled events in “IRQs Activity Monitoring” has ability to wake up asleep system. It includes

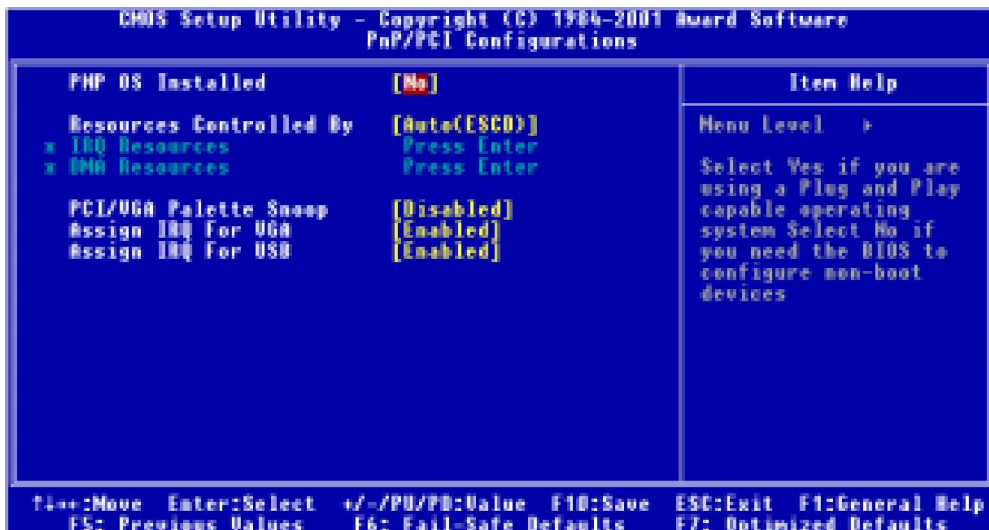
- IRQ3 (COM 2)
- IRQ4 (COM 1)
- IRQ5 (LPT 2)
- IRQ6 (Floppy Disk)
- IRQ7 (LPT 1)
- IRQ8 (RTC Alarm)
- IRQ9 (IRQ2 Redir)
- IRQ10 (Reserved)
- IRQ11 (Reserved)
- IRQ12 (PS/2 Mouse)
- IRQ13 (Coprocessor)
- IRQ14 (Hard Disk)
- IRQ15 (Reserved)



4.9 PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components.

This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.



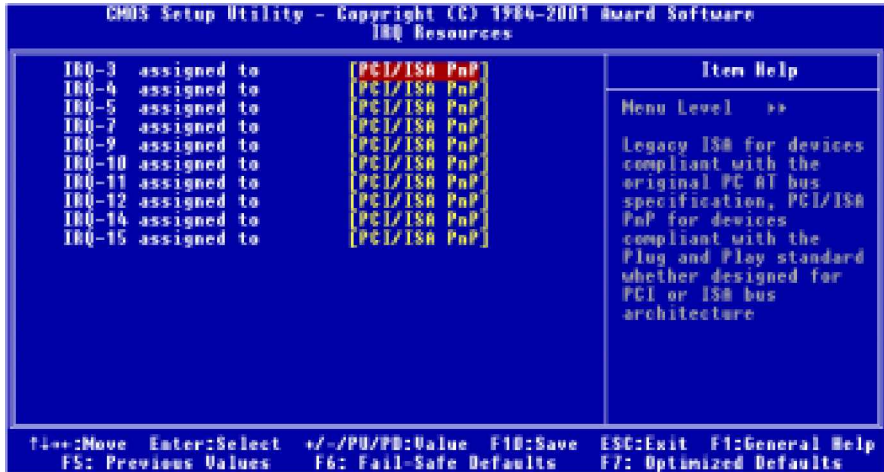
PNP OS Installed

Select Yes if you are using a Plug and Play capable operating system. Select No if you need the BIOS to configure non-boot devices.

Resource controlled by

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95. If you set this field to “manual” choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a “ ”).

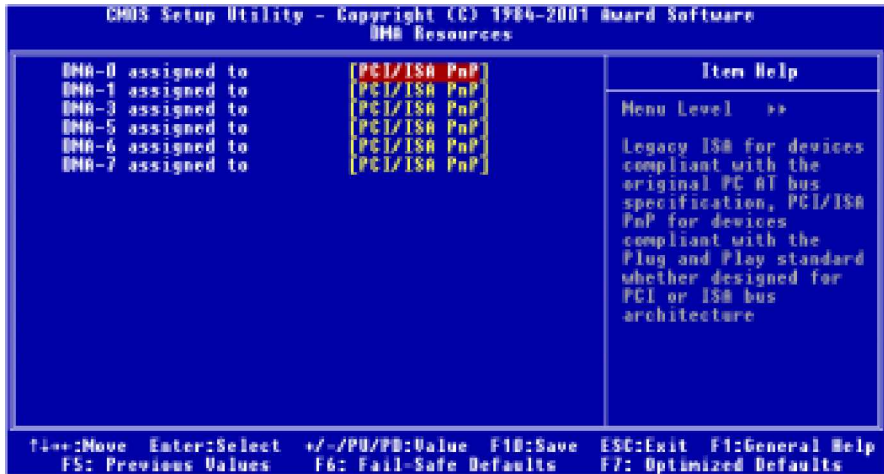
The choice: Auto (ESCD), Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt. It allows you to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

The Choice: “Legacy ISA” and “PCI/ISA PnP”

DMA Resources



When resources are controlled manually, assign each system DMA channel a type, depending on the type of device using the DM channel. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

The Choice: “Legacy ISA” and “PCI/ISA PnP”

PCI/VGA Palette Snoop

Leave this field at Disabled.

The choices : Enabled/Disabled.

Assign IRO For VGA/USB

To enable VGA/USB IRQ assignment by selecting enabled.

4.10 PC Health Status

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software		
PC Health Status		
Current CPU1 Temp.	60°C/140°F	Item Help Menu Level →
Current CPU2 Temp.	60°C/140°F	
Current CPUFAN1 Speed	4500 RPM	
Current CPUFAN2 Speed	4500 RPM	
Vcore1	1.71 V	
Vcore2	1.70 V	
3D	3.40 V	
50	4.98 V	
120	12.08 V	
F1←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help		
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

4.11 Default Menu

Selecting “Defaults” from the main menu shows you two options which are described below

Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N) ? **N**

Pressing ‘Y’ loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? **N**

Pressing ‘Y’ loads the default values that are factory settings for optimal performance system operations.

4.12 Supervisor/User Password Setting

You can set either supervisor’s or user’s password, or both of them. The differences between them are as follow:

Supervisor password : can enter and change the options of the setup menus.

User password : just can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to “System”, the password will be required both at boot and at entry to Setup. If set to “Setup”, prompting only occurs when trying to enter Setup.

4.13 Exiting Selection

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? **Y**

Pressing “Y” stores the selections made in the menu in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? **Y**

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

4.14 POST Messages

During the Power On Self-Test (POST), if the BIOS detects an error requiring you to do something to fix, it will either sound a beep code or display a message. If a message is displayed, it will be accompanied by:

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

POST Beep

Currently there are two kinds of beep codes in BIOS. This code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps. The other code indicates that your DRAM error has occurred. This beep code consists of a single long beep repeatedly.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS.

CMOS BATTERY HAS FAILED

CMOS battery is no longer functional. It should be replaced.

CMOS CHECKSUM ERROR

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER

No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain proper system boot files. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.

DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP

Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

DISPLAY SWITCH IS SET INCORRECTLY

Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.

DISPLAY TYPE HAS CHANGED SINCE LAST BOOT

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

EISA Configuration Checksum Error PLEASE RUN EISA CONFIGURATION UTILITY

The EISA non-volatile RAM checksum is incorrect or cannot correctly read the EISA slot. This can indicate either the EISA non-volatile memory has become corrupt or the slot has been configured incorrectly. Also be sure the card is installed firmly in the slot.

EISA Configuration Is Not Complete PLEASE RUN EISA CONFIGURATION UTILITY

The slot configuration information stored in the EISA non-volatile memory is incomplete.

Note: When either of these errors appear, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

ERROR ENCOUNTERED INITIALIZING HARD DRIVE

Hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

ERROR INITIALIZING HARD DISK CONTROLLER

Controller cannot be initialized. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.

FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT

The system cannot find or initialize the floppy drive controller. make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

Invalid EISA Configuration PLEASE RUN EISA CONFIGURATION UTILITY

The non-volatile memory containing EISA configuration information was programmed incorrectly or has become corrupt. Re-run EISA configuration utility to correctly program the memory.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.
--

KEYBOARD ERROR OR NO KEYBOARD PRESENT

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

Memory Address Error at ...

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory parity Error at ...

Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

MEMORY SIZE HAS CHANGED SINCE LAST BOOT

Memory has been added or removed since the last boot. In EISA mode use Configuration Utility to reconfigure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory fields.

Memory Verify Error at ...

Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

OFFENDING ADDRESS NOT FOUND

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

OFFENDING SEGMENT:

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.

PRESS A KEY TO REBOOT

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

PRESS F1 TO DISABLE NMI, F2 TO REBOOT

When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

RAM PARITY ERROR - CHECKING FOR SEGMENT ...

Indicates a parity error in Random Access Memory.

Should Be Empty But EISA Board Found PLEASE RUN EISA CONFIGURATION UTILITY

A valid board ID was found in a slot that was configured as having no board ID.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.
--

Should Have EISA Board But Not Found PLEASE RUN EISA CONFIGURATION UTILITY

The board installed is not responding to the ID request, or no board ID has been found in the indicated slot.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.
--

Slot Not Empty

Indicates that a slot designated as empty by the EISA Configuration Utility actually contains a board.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.
--

SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT ...

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

**Wrong Board In Slot
PLEASE RUN EISA CONFIGURATION UTILITY**

The board ID does not match the ID stored in the EISA non-volatile memory.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.
--

FLOPPY DISK(S) fail (80) → Unable to reset floppy subsystem.

FLOPPY DISK(S) fail (40) → Floppy Type mismatch.

Hard Disk(s) fail (80) → HDD reset failed

Hard Disk(s) fail (40) → HDD controller diagnostics failed.

Hard Disk(s) fail (20) → HDD initialization error.

Hard Disk(s) fail (10) → Unable to recalibrate fixed disk.

Hard Disk(s) fail (08) → Sector Verify failed.

Keyboard is locked out - Unlock the key.

Keyboard error or no keyboard present.

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

BIOS ROM checksum error - System halted.

The checksum of ROM address F0000H-FFFFFH is bad.

Memory test fail.

BIOS reports the memory test fail if the onboard memory is tested error.

4.15 BIOS POST Check Point List

AWARDBIOS provides all IBM standard Power On Self Test (POST) routines as well as enhanced AWARDBIOS POST routines. The POST routines support CPU internal diagnostics. The POST checkpoint codes are accessible via the Manufacturing Test Port (I/O port 80h).

Whenever a recoverable error occurs during the POST, the system BIOS will display an error message describing the message and explaining the problem in detail so that the problem can be corrected.

During the POST, the BIOS signals a checkpoint by issuing one code to I/O address 80H. This code can be used to establish how far the BIOS has executed through the power-on sequence and what test is currently being performed. This is done to help troubleshoot faulty system board.

If the BIOS detects a terminal error condition, it will halt the POST process and attempt to display the checkpoint code written to port 80H. If the system hangs before the BIOS detects the terminal error, the value at port 80H will be the last test performed. In this case, the terminal error cannot be displayed on the screen. The following POST checkpoint codes are valid for all AWARDBIOS products with a core BIOS date of 07/15/95 version 6.27 (Enhanced).

Code	Description
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers
C1h	Detect memory -Auto-detection of DRAM size, type and ECC. -Auto-detection of L2 cache (socket 7 or below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
0h1	Expand the Xgroup codes locating in physical address 1000:0

Code	Description
02h	Reserved
03h	Initial Superio_Early_Init switch.
04h	Reserved
05h	1. Blank out screen 2. Clear CMOS error flag
06h	Reserved
07h	1. Clear 8042 interface 2. Initialize 8042 self-test

Code	Description
08h	1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface.
09h	Reserved
0Ah	Disable PS/2 mouse interface (optional). Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). Reset keyboard for Winbond 977 series Super I/O chips.
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.
0Fh	Reserved
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.
11h	Reserved
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
15h	Reserved
16h	Initial Early_Init_Onboard_Generator switch.
17h	Reserved
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch.
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)
20h	Reserved
21h	HPM initialization (notebook platform)
22h	Reserved
23h	1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute. 2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead. 3. Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information. 4. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots. 5. Early PCI initialization: -Enumerate PCI bus number -Assign memory & I/O resource -Search for a valid VGA device & VGA BIOS, and put it into C000:0.

Code	Description
24h	Reserved
25h	Reserved
26h	Reserved
27h	Initialize INT 09 buffer
28h	Reserved
29h	Program CPU internal MTRR (P6 & PII) for 0-640K memory address. Initialize the APIC for Pentium class CPU. Program early chipset according to CMOS setup. Example: onboard IDE controller. Measure CPU speed. Invoke video BIOS.
2Ah	Reserved
2Bh	Reserved
2Ch	Reserved
2Dh	Initialize multi-language. Put information on screen display, including Award title, CPU type, CPU speed
2Eh	Reserved
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Reset keyboard except Winbond 977 series Super I/O chips.
34h	Reserved
35h	Reserved
36h	Reserved
37h	Reserved
38h	Reserved
39h	Reserved
3Ah	Reserved
3Bh	Reserved
3Ch	Test 8254
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1.
3Fh	Reserved
40h	Test 8259 interrupt mask bits for channel 2.
41h	Reserved
42h	Reserved
43h	Test 8259 functionality.
44h	Reserved
45h	Reserved
46h	Reserved
47h	Initialize EISA slot
48h	Reserved
49h	1. Calculate total memory by testing the last double word of each 64K page. 2. Program writes allocation for AMD K5 CPU.
4Ah	Reserved
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	1. Program MTRR of M1 CPU 2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range.

Code	Description
	3. Initialize the APIC for P6 class CPU. 4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.
4Fh	Reserved
50h	Initialize USB
51h	Reserved
52h	Test all memory (clear all extended memory to 0)
53h	Reserved
54h	Reserved
55h	Display number of processors (multi-processor platform)
56h	Reserved
57h	1. Display PnP logo 2. Early ISA PnP initialization -Assign CSN to every ISA PnP device.
58h	Reserved
59h	Initialize the combined Trend Anti-Virus code.
5Ah	Reserved
5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Ch	Reserved
5Dh	1. Initialize Init_Onboard_Super_IO switch. 2. Initialize Init_Onboard_AUDIO switch.
5Eh	Reserved
5Fh	Reserved
60h	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
61h	Reserved
62h	Reserved
63h	Reserved
64h	Reserved
65h	Initialize PS/2 Mouse
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Ch	Reserved
6Dh	1. Assign resources to all ISA PnP devices. 2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO".
6Eh	Reserved
6Fh	1. Initialize floppy controller 2. Set up floppy related fields in 40:hardware.
70h	Reserved
71h	Reserved
72h	Reserved

Code	Description
73h	(Optional Feature) Enter AWDFLASH.EXE if : -AWDFLASH is found in floppy drive. -ALT+F2 is pressed
74h	Reserved
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM.....
76h	Reserved
77h	Detect serial ports & parallel ports.
78h	Reserved
79h	Reserved
7Ah	Detect & install co-processor
7Bh	Reserved
7Ch	Reserved
7Dh	Reserved
7Eh	Reserved
7Fh	1. Switch back to text mode if full screen logo is supported. -If errors occur, report errors & wait for keys -If no errors occur or F1 key is pressed to continue: Clear EPA or customization logo.
80h	Reserved
81h	Reserved
82h	1. Call chipset power management hook. 2. Recover the text font used by EPA logo (not for full screen logo) 3. If password is set, ask for password.
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	1. USB final Initialization 2. NET PC: Build SYSID structure 3. Switch screen back to text mode 4. Set up ACPI table at top of memory. 5. Invoke ISA adapter ROMs 6. Assign IRQs to PCI devices 7. Initialize APM 8. Clear noise of IRQs.
86h	Reserved
87h	Reserved
88h	Reserved
89h	Reserved
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	1. Enable L2 cache 2. Program boot up speed 3. Chipset final initialization. 4. Power management final initialization 5. Clear screen & display summary table 6. Program K6 write allocation 7. Program P6 class write combining

Code	Description
95h	<ol style="list-style-type: none"> 1. Program daylight saving 2. Update keyboard LED & typematic rate
96h	<ol style="list-style-type: none"> 1. Build MP table 2. Build & update ESCD 3. Set CMOS century to 20h or 19h 4. Load CMOS time into DOS timer tick 5. Build MSIRQ routing table.
FFh	Boot attempt (INT 19h)

4.16 BIOS Flash Utility

Utilize AWARD Flash BIOS programming utility to update on- board BIOS for the future new BIOS version. Please contact your technical window to get this utility if necessary.

NOTE : Remark or delete any installed Memory Management Utility (such as HIMEM.SYS, EMM386.EXE, QEMM.EXE, ..., etc.) in the CONFIG.SYS files before running Flash programming utility.

Chapter 5

ATX Power Setting

This part of the [manual](#) provides you a few useful tips to quickly get your 3301712 running with different power supply. As jumper configuration has been addressed in the earlier paragraphs, this section will basically focus on the ATX power setting.

Backplane

3301712 is a full-sized SBC, and therefore is able to run on any PICMG backplane, active or passive.

ATX power

3301712 is designed to support both AT and ATX powering. The following instruction demonstrates how the ATX function can be applied.

3301712 adapts its ATX power through its ATX power control connector (J14). This ATX power interface can be connected to a supported backplane. Such a backplane is required to have a 4 pin connector for feeding the ATX power to 3301712. An example is illustrated below:

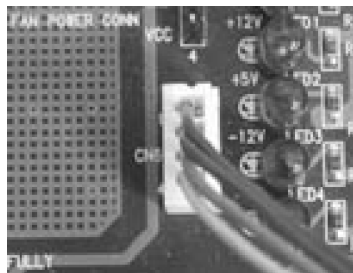


Figure. 3 ATX power control connection on backplane

Figure 4 shows how the jumpers and connectors are set for using ATX function on 3301712. Please short both 3-5 and 4-6 pin of JP3 to enable its ATX function. Besides connecting the 4 pin ATX power control cable to J14. A TOGGLE SWITCH should be used to switch the ATX Power on/off for SBC. Usually the TOGGLE SWITCH is located on the chassis front panel. By pressing the switch button once, the power will be on, and press again to turn it off. It should be connected to J7.

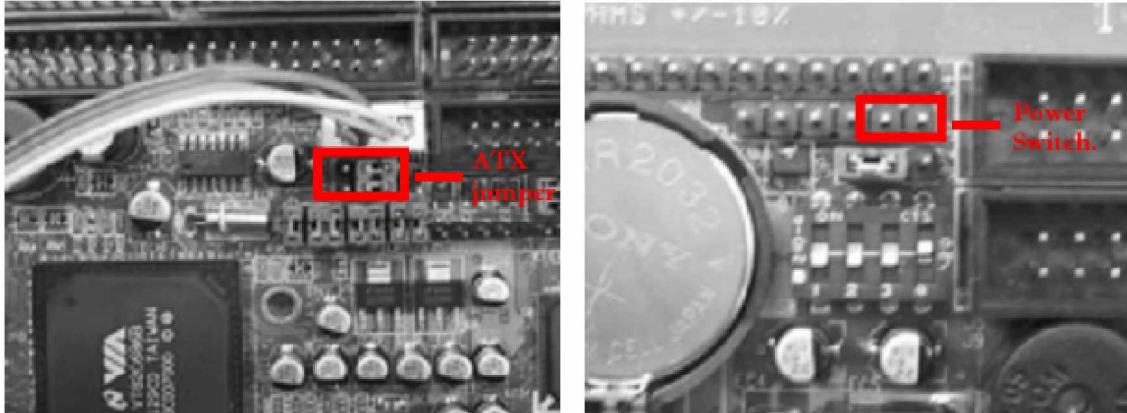


Figure. 4 ATX setting on 3301712

The last thing to do before your 3301712 system can be ATX powered is to connect 20-pin power cable of the ATX POWER to the backplane. By switching your ATX power on, the system goes into power standby. Clicking your 3301712 ATX power button should successfully turn the system on.

NOTE:

When AT power supply is the system power source, keeping “ACPI function” at “NO” and “State After Power Failure” at “ON” in the Power Management Setup of the BIOS is recommended.

If using ATX power supply, remember to adjust the “State After Power Failure” to proper condition.

Contact Information

Any advice or comments about our products and service, or anything we can help you with please don't hesitate to contact with us. We will do our best to support you for your products, projects and business

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